Abstract

Background and aim : Today, by increasing population, the most important surface water resources are used for domestic and industrial application . In order to purify the water of the coagulant aid coagulant different materials used . Coagulation process in water treatment is a special place so many studies on the optimum type of coagulant to remove turbidity and color. This study aimed to evaluate the efficiency of conventional coagulant (polyaluminum chloride, ferric sulfate, ferric chloride, ferrous sulfate and aluminum sulfate) was performed to remove turbidity and color from drinking water.

Method: In this cross-sectional study was conducted sampling in the summer and autumn 95 . a variety of turbidity of the samples were prepared in the laboratory, water and sewage in western Azarbayjan. Samples were subjected to rapid mixing at 100 rpm for one minute and slowly mixing at a speed of 25 rpm for 20 minutes . It was also kept for 25 minutes to settle in stagnant conditions. At the end of the test, the samples were measured using a Turbidimeter and spectrophotometer, respectively. After collecting data and applying quality controls at the data entry stages to the computer, the data will be analyzed using Excel and SPSS version 20 . And $P < 0.01$ was considered significant..

results : The results of this study showed that in conventional coagulants with increased turbidity, the efficiency of coagulants has increased . At higher turbidity, the efficiency is higher than 99% . And in higher turbidity, poly aluminum chloride has a better performance than other coagulants . Also, with increasing turbidity, the concentration of optimum coagulant in the coagulants increases . The optimal dose of poly aluminum chloride coagulant is lower than other coagulants. . It also increases the amount of produced sludge by increasing the loading capacity and turbidity . The amount of sludge produced in the use of poly aluminum chloride coagulant is higher than other coagulants . Data from this study also showed current cost of coagulant for coagulation in the water industry and the amount of water needed to purify the consumption of poly-aluminum chloride, it is higher than other coagulants.

Conclusions: Overall, the results of comparing the performance of conventional coagulant to remove turbidity and color indicate The best coagulant to remove turbidity and color in the study area is Poly Aluminum Chloride. On the other hand, the removal efficiency increased with increasing doses of coagulants . The results showed that the removal efficiency was affected by the initial opacity, so that higher the initial turbidity removal efficiency will be more higher.

Keywords: conventional coagulant , turbidity and color removed , Orumiyeh water treatment plant